



**UNITED STATES NAVY**

# MEDICAL NEWS LETTER

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### Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor are they susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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### Retrolental Fibroplasia

The purposes of this study were (1) to determine whether the incidence of RLF is positively associated with the duration of exposure of the premature infant to an oxygen-enriched environment; (2) to evaluate the effect on mortality of lessening the amount of oxygen given the premature infant after the age of 48 hours; and (3) to obtain information of a general nature concerning the premature infant and his parents that might be of use both in interpreting the data obtained and in formulating any future investigations.

The study was designed so that two groups of premature infants received widely different amounts of oxygen while all other factors associated with the care of the infants were kept as similar as possible.

There were 786 premature infants in the study. These infants represent all those who were born in, or brought to, the 18 cooperative hospital nurseries during the study year who weighed 1500 gm. or less at birth, and who survived 48 hours, at which time they were admitted to the study. Of these infants, 586 were followed for a minimum of two and one-half months and represent the study population so far as RLF is concerned.

One-third of the infants in each hospital who were admitted to the study during the first 3 months were assigned at random to a group which was to be given oxygen for 28 days (routine oxygen group), and two-thirds were assigned to a group which was to be given oxygen only at the discretion of the pediatrician, on the basis of clinical need (curtailed oxygen group). The assignments were made in matched sets of three infants. For the remaining 9 months of the study all of the infants were assigned to the latter group. There were 53 infants in the routine-oxygen group and 533 infants in the curtailed-oxygen group who were followed sufficiently long to permit a diagnosis. Eye examinations were made at frequent intervals, in most instances until the infant was 6 months of age.

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The mortality rates in the routine and curtailed oxygen groups did not differ significantly either during the first 3 months of the study or throughout the entire year.

The incidence of active stages of RLF in the routine oxygen group was approximately twice that in the curtailed oxygen group. The incidence of cicatricial grades of the disease in the routine oxygen group was approximately three and one-half times that in the curtailed oxygen group.

The incidence of both active and cicatricial forms of RLF was less for infants of single birth than for those of multiple birth. The incidence of the cicatricial form of the disease for infants of single birth was only approximately one-third of that for infants of multiple birth despite the fact that infants of single birth received oxygen for two days more, on the average, and had an average gestational age two weeks less than the infants of multiple birth.

The incidence of cicatricial grades of RLF in infants of both single and multiple birth who were in the routine oxygen group, and whose health status, therefore, can be considered representative of all the infants in the study (classified as the "well" infant group), was approximately twice that for infants who received similarly long stays in oxygen given on the basis of clinical need (classified as the "sick" infant group).

The incidence of both active and cicatricial RLF increased rapidly with increased duration of exposure to oxygen for infants of both single and multiple birth. The incidence in infants of single birth increased most rapidly for exposures to oxygen of only 1 to 2 days. For infants of multiple birth, the incidence increased up to periods of exposure to oxygen of about 2 weeks.

The incidence of cicatricial RLF for the most part was not dependent upon the concentration of oxygen administered. Thus, the incidence was not appreciably greater for those infants of single birth who received an average concentration of oxygen of about 33% than for those infants who received an average concentration of oxygen approximately 50% for similar periods of time. The incidence of cicatricial RLF for infants of multiple birth who received oxygen for relatively short periods of time (two days) likewise was not appreciably influenced by concentration. However, with longer exposures (12 days) it did increase with the average concentration of oxygen administered.

The incidence of cicatricial RLF was not appreciably dependent upon gestational age for infants of single birth. The effect of gestational age on the incidence of the disease for infants of multiple birth could not be determined because of variations in duration of exposure to, and concentration of, oxygen, as well as because of differences in birth weights of the infants.

The incidence of cicatricial RLF was inversely related to birth weight for all infants.

The incidence of cicatricial RLF was not apparently influenced by race, sex, type of incubator used, or any of a number of other miscellaneous factors associated with either the infant or the mother.

The incidence of cicatricial RLF in the group of infants who received no added oxygen after entry into the study (age 48 hours) was less than 1%.

Exposure to added oxygen (prior to admission to the study) for less than a total of 48 hours was accompanied by some risk of cicatricial RLF. However, the disease did not progress to the cicatricial grades as frequently as for longer exposures. Moreover, the incidence of active RLF was also reduced.

The severity of cicatricial RLF was not dependent upon the duration in, or concentration of, oxygen, gestational age, birth weight, race, sex, or geographic location of the hospital nursery for infants of either single or multiple birth.

Spontaneous regression of RLF from active Stages 1 and 2 occurred in approximately 90% of the cases of infants of single birth. Regression was much less frequent from active Stages 3, 4, and 5 for infants of single birth and a relatively rare occurrence in infants of multiple birth from Stage 2 or greater.

The age of infant at onset of RLF was not dependent upon the gestational age or birth weight, but it increased with the length of stay in oxygen, particularly for longer periods (several weeks or more). Some infants developed the disease while still in oxygen.

The average weight gain of infants did not differ widely between groups of infants who did and did not develop cicatricial RLF.

Other factors, such as number of transfusions and infusions, frequency of medication, dietary adjuncts, complications of pregnancy, and age of mother did not appear to affect the incidence of the cicatricial form of the disease.

Of the factors considered, this controlled study shows conclusively that the length of time the premature infant is kept in an oxygen enriched environment is the important factor in the production of RLF.

Limiting the duration in oxygen to that deemed necessary to meet frank clinical emergency was shown to be without effect on the survival rate of the premature infant.

For all practical purposes, there is no concentration of oxygen in excess of that in air that is not associated with risk of developing RLF.

Infants of multiple birth appear to be significantly more susceptible to RLF than infants of single birth.

Rate of withdrawal from oxygen does not appear to play a primary role in the pathogenesis of RLF. (Kinsey, V.E., Retrolental Fibroplasia - Cooperative Study of Retrolental Fibroplasia and the Use of Oxygen: Arch. Ophth., 56: 483-528, October 1956)

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### Epiphysiolysis

The sharp limitation of the occurrence of slipping of the upper femoral epiphysis to the accelerative phase of the pubertal growth spurt (such variations as occur duplicating strikingly a frequency curve of the time of occurrence

of the "year of maximum growth—the MG year"), suggests conditioning of the episode by a metabolic abnormality peculiar to this period. The fact that it occurs most frequently in the overweight child recalls an old observation of a reciprocal relationship between gain in weight and calcium retention; the more rapidly the growing animal was permitted to gain in weight, the more florid the rickets that resulted from the Steenbock diet. A similar phenomenon is observed when testosterone is administered to the normal boy; marked increase in the retention of nitrogen is accompanied by reciprocal fall in calcium storage. The thesis of this article is that suboptimal mineralization is occurring in the child with the slipped upper femoral epiphysis, that a number of factors may contribute to this, and that in his role as supervisor of the growth process, the pediatrician may make a preventive contribution by an awareness of the potentiality of its occurrence in the years that precede its anticipated incidence.

The basic problem in determining the etiology of epiphysiolysis resolves itself to ascertaining what factor or factors are responsible for the thickened, weakened epiphyseal plate in these children. The authors believed that if excessive weight gain and growth could be controlled and proper mineralization of the epiphyseal plate insured, the slipping itself might be averted almost regardless of the basic etiology.

In a series of studies, the authors have developed the thesis that suboptimal mineralization might result from many different causes and that it is possible that no single one is at fault as the underlying cause of epiphysiolysis. Among the causes are (1) the inadequacy of the intake of calcium and of vitamin D, (2) disproportionate gain in weight, (3) interference with calcium utilization resulting from infection, and (4) hormonal influences. Other disorders impairing calcium metabolism, such as chronic renal disease, parathyroid disease, and liver disease, are not pertinent to the present discussion.

The pathogenesis of epiphysiolysis remains incompletely known. Undoubtedly, Key's concept of periosteal thinning occurring during the puberty growth period plays a role in the weakness of the epiphyseal plate, but a minor one. Other factors, such as the anatomically unique situation of the upper femoral epiphysis, certainly contribute to final slipping. However, the basic problem of what causes the thickening and weakness of the epiphysis has not been solved. Presently, the theory which seems to best fit the clinical picture of the disease is that of Harris which suggests that the thickened weak epiphyseal plate is a consequence of a relative deficiency of sex hormones referable to pituitary growth hormone. This theory at least provides a rationale for preventive therapy.

Subjected to metabolic balance studies, all subjects in this series showed subnormal calcium retention for their ages. In four instances in which vitamin D was given, marked improvement in calcium retention resulted. Probably, the low calcium retention was not due to the postoperative state, because it was improved by vitamin D dosage. These balance-study figures suggest that suboptimal mineralization plays a role in the causation of epiphysiolysis.

Analysis of serum phosphorus levels corroborates this. The favorable balances obtained with adequate calcium and vitamin D intake immediately suggest one approach to prevention of the disease. The patient in the accelerative phase of puberty growth requires 1300-1400 mg. of calcium and 1000 I. U. of vitamin D daily to insure optimal mineralization.

Preventive care directed at the obese older child who may develop the disease in a few years is equally well defined. Dietary habits should be reviewed and the high-carbohydrate, low-protein diets usually seen in these children corrected. A protein intake representing 20% of the total caloric intake is essential if total calories are reduced, together with the amount of calcium found in a quart of milk and approximately 1000 units of vitamin D daily. Occasionally, one sees an obese patient whose only dietary error is excessive consumption of food of proper caloric distribution and here the method of management is clear. It is emphasized that children who by reason of body habitus, familial growth pattern, or dietary indiscretions are obese, or becoming so, should be detected early and appropriate preventive measures taken. If not detected and given preventive care early, one cannot expect to control obesity in the last year before the onset of the prepuberty growth spurt.

The rapidly growing tall thin child presents a somewhat different problem. If such a child develops epiphysiolysis because of relative excess of growth hormone relative to sex hormones, logically, treatment with sex hormones seems indicated. However, such an approach has several disadvantages: Testosterone and estrogen produce decreased calcium retention, epiphyseal closure before completion of normal growth is likely, and the orderly progression of endocrine development in prepubertile children is interfered with.

Prophylactic sex hormone therapy would seem contraindicated at the present time. Its use after slipping has occurred on one side to effect closure and reduce the chance of slipping of the other hip seems rational and is under study by the orthopedists. On the basis of the results of the previous balance studies, the preventive treatment of choice in this somatotype is the provision of an adequate diet deriving 20% of the calories from protein and the meticulous day-to-day ingestion of adequate calcium, phosphorus, and vitamin D. The latter is especially important and should be continued until 2 years after the attainment of sexual maturity at which time bone growth will have ceased. (Johnston, J. A., Manson, G., Mitchell, C. L., Epiphysiolysis: J. Dis. Chil., 92: 337-346, October 1956)

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#### Pancreatic Dornase Aerosol

Pulmonary complications such as atelectasis, pneumonitis, lung abscess, and thick tenaceous sputum are frequently an important factor in morbidity and mortality of many medical diseases and with postoperative and posttraumatic states. Antibiotics have controlled many of the infectious phases of

this problem, but the obstructive phenomena remain unsolved. The use of expectorants or vapor inhalations has been of limited usefulness. Endotracheal aspirations or bronchoscopy are frequently necessary, but are traumatic and not always successful, even when repeated.

In recent years, the use of enzymes and/or enzyme activators such as streptokinase-streptodornase (Varidase), trypsin, and detergents such as alevaire has been popularized. Trypsin has been shown by many investigators to be effective, but not universally. Serious complications have been reported and almost all authors advise use of antihistamines and/or epinephrine or ephedrine inhalations with trypsin. The effects of these drugs have not been considered in these reports. Varidase has been used with less success.

Detergents—particularly alevaire—are in common use and have been reported to be effective. Continuous therapy by tent or nasal catheters, or repeated treatments each day for several days are necessary to obtain results.

Pancreatic desoxyribose-nuclease (dornase) prepared by the method of McCarty was first used in patients with thick purulent sputum, such as those with bronchiectasis, with excellent results. Satisfactory results with a purified pancreatic dornase have been reported with a review of pharmacological effects of the drug. No irritating effects were noted. Pancreatic dornase and trypsin have been used together with good effect, but many serious reactions.

The authors evaluate the usefulness of this purified pancreatic dornase in all pulmonary conditions presented as unresolved by standard procedures. The local effects and general reactions to dornase were also studied by clinical and laboratory means, including bronchoscopy and pathological examination of resected specimens. The effect of pancreatic dornase on the discovery of malignant disease by cellular cytology from bronchial washings was also studied.

From present results and previously reported series of cases, pancreatic dornase would seem to be a useful tool in controlling pulmonary disease secondary to plugging of bronchi by mucoid or thick purulent secretions. Results have been excellent in those patients with acute disease and there has been improvement in almost all cases treated, even those with far advanced disease.

In general, it was noted that with the first inhalation of dornase there was loosening of secretions and cough and increase in the quantity of sputum to double or triple that previously obtained. This might continue for three or four treatments and with the few resistant cases it continued even longer. In the satisfactory cases, this increase would occur with only the first or second treatment. Following the period of increased secretion, there would be rapid decrease in the amount of sputum until in those rated cured or improved, there was no significant sputum production. This course of events leads to the opinion that the dornase effect was not one of irritation, but rather an actual lysing of the sputum permitting clearing of the airway.

Fortunately, these good results have been obtained without serious complications of the treatment itself. Indeed, there have been few reactions of any type even with prolonged use and with repeated courses of treatment. Two patients had sore mouths following dornase, but only one was thought to be properly blamed on dornase, the other probably being due to monilia infection. Two had nausea and vomiting after dornase, but both had other reasons: one had a dumping syndrome and the other was receiving radiation therapy. Only one in this entire group asked to have the dornase discontinued. This is in contradistinction to trypsin which, although also effective has been followed frequently by severe irritation and some serious reactions.

Studies of the bronchial tree by bronchoscopy failed to show any significant change in 56 patients studied. Biopsies and cellular cytology likewise failed to reveal any demonstrable change which is at variance with the results following trypsin where metaplasia has been reported.

In those in whom complete cure of an acute lesion such as atelectasis is to be obtained, this usually occurs with relatively few inhalations. In more chronic diseases, such as tracheitis sica and chronic lung abscess, or lung abscesses secondary to tumor, longer courses have been necessary.

Unfortunately, the author has had only two questionable asthmatics, because as a group these have given unsatisfactory results with inhalation therapy with enzymes alone or alevaure alone in most reported series. The two cases were both improved. Two others coughed up large bronchial plugs with relief of symptoms, although they were not proved to be asthmatic patients. (Cliffton, E. E., Pancreatic Dornase Aerosol in Pulmonary, Endotracheal and Endobronchial Disease: Dis. Chest, XXX: 373-382, October 1956)

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#### Acute Leukemia Over Age of Fifty

Preliminary observations made in New Zealand suggested that, as in other parts of the world, leukemia is particularly common in middle-aged and elderly people. Moreover, the impression was obtained that, contrary to the views expressed in many published papers and in standard textbooks, the more acute forms of leukemia bulk largely among the total occurring in these age groups. At the same time, the clinical picture was often found to be unusual in acute cases. This article presents the results of investigations made to test the correctness of these clinical impressions. They are presented in two parts: (1) an attempt to define the incidence of the various types of leukemia in a known population; and (2), a description of the clinical and pathologic findings in a series of patients over the age of fifty.

This investigation shows that in New Zealand as in other parts of the world the incidence of leukemia is highest in the older age groups. Death rates from leukemia rise abruptly after the age of fifty, and this may well

be a comparatively recent phenomenon. While it has been widely accepted that chronic types of leukemia are mainly responsible for the increased numbers occurring in the middle-aged and elderly, the present figures reveal that the acute forms also play a notable part. It may well be wondered whether the general trend towards an older age distribution is not largely accounted for by a rise in the incidence of acute rather than of chronic leukemia. This remains to be investigated in future years. In any such investigation, all acute leukemias should be treated as a single group for it does not appear profitable at present to make dogmatic distinctions between the incidence of the various types of acute leukemia.

While there exist in the literature many descriptions of acute leukemia in children and young adults, articles devoted to its study in older people are almost completely lacking. Although it is recognized that patients over fifty not infrequently develop acute leukemia, the tacit assumption is generally made that its clinical and hematologic picture is identical at whatever age it occurs. The authors' experience has led them to believe that this assumption is not justified. "The onset is often sudden, with fever, rigors, prostration, pains in the back and limbs, and, frequently, a sore throat. There is a severe stomatitis . . . a rapidly progressive anemia and a generalized hemorrhagic tendency." This picture of acute myeloid leukemia from a standard textbook of hematology shows well the course of events in many young patients, but from it the authors would recognize few of the older people whom they have seen or to whose case records they have had access. They have produced evidence in this article which suggests that acute leukemia is of relatively frequent occurrence in patients over fifty years old. They believe that in them the disease appears so often in a guise differing from that commonly accepted that a new account of its manifestations is warranted.

The authors were first impressed by the frequency with which such patients were admitted to hospital with histories and physical findings giving few clues to the true nature of their illness which became clear only as a result of laboratory investigations, and, when thus established, caused surprise among the attending clinicians. These early impressions were fully borne out as more case protocols became available from other sources. Such preliminary diagnoses as carcinomatosis, heart failure, pernicious anemia, or secondary anemia occurred again and again. Other cases of acute leukemia masqueraded initially as diabetes, chronic bronchitis, nephritis, and intestinal obstruction.

Tables show that in the great majority of cases the onset of the complaint was insidious with completely nonspecific symptoms and few signs apart from pallor, pointing to an affection of the hemopoietic system. Even the more specific signs like purpura were often inconspicuous and discovered only by accident or diligent searching. Frank hemorrhage was comparatively rare and, when marked, usually portended early death. Respiratory infections occurred sometimes as the presenting sign; many patients died as a result of pneumonia.

The question arises whether some or all of these patients may not have had their disease much longer than the ostensible duration of their symptoms would indicate. Block, Jacobson, and Bethard, as well as Meacham and Weisberger have reported a number of case histories in which a "preleukemic" phase of many months or years preceded the onset of true acute leukemia. As in this series, the acute phase, once it had developed, was brief and resistant to treatment. Blood and marrow findings were similar to cases in this series, and it may be significant that 11 of the 12 patients in Block's series were over forty, and 5 of the 6 patients with leukemia in Meacham's series were over fifty.

A study of the literature reveals many scattered case reports similar to those described in which the authors assumed that they were dealing not with acute, but with chronic leukemia whose early phases had escaped detection and which presented with the terminal manifestations of the "blastic" stage. While the authors admit the attractiveness of such an assumption, they regard it as unprofitable merely to argue about nomenclature. What seems important is to establish that these cases show clinical hematologic and pathologic features sufficiently distinctive to make of them a group which can be clearly separated from another group—that of the chronic leukemias.

The outstanding findings in this group of patients over fifty were:

1. The closeness with which their early history mimicked that of chronic leukemia in both duration and nature of symptoms and the sharply different course of the disease once the diagnosis had been established. While their insidious onset resembled that of chronic leukemia, it contrasted vividly with that in most cases of acute leukemia in young patients.
2. The paucity of abnormal physical signs in comparison with the chronic group, and probably also with children and young adults suffering from acute leukemia, is noted.
3. The complete resistance to most forms of therapy. This is quite unlike the earlier phases of chronic leukemia and also differentiates these patients from younger ones with acute leukemia. Agreement is practically unanimous among the many workers in this field that few remissions are produced in adults by the same therapeutic agents which may be highly successful in children with acute leukemia.
4. The wide variety of hematologic and histologic findings in different patients and their lack of correlation with the length or nature of the clinical history. This again distinguished the present group from both of the others which show more uniform laboratory findings.

It appears that the type of leukemia found in this series of patients can be distinguished from chronic leukemia on the one hand and from acute leukemia in young patients on the other. The authors believe that, because of its usually brief clinical course following diagnosis, because of its intractability and the generally high degree of immaturity of the pathologic leukocytes, it should be termed "acute," whatever the length of indefinite symptoms prior to diagnosis.

The authors are not informed as to the nature of the pathologic process which leads to the development of this fatal disease. For this reason, it is not possible to speculate whether it is the same or whether it differs from that responsible for the occurrence of acute leukemia at earlier ages. However, the frequency with which this clinical entity occurs makes it highly desirable to concentrate further research on its clinical features, pathologic background, and especially on a means of treating it successfully.

Analysis of the death certificates of 553 patients recorded as having died from leukemia showed that 57% of deaths occurred over the age of fifty, that more than 60% of all leukemias were acute, and that 46% of acute leukemias occurred over the age of fifty.

Investigation of a selected group of 97 patients over fifty, dying from acute leukemia, suggested that the clinical, hematologic, and histologic features of the disease are distinctive and can be differentiated both from those of acute leukemia in younger patients and from chronic leukemia. (Gunz, F. W., Hough, R. F., Acute Leukemia Over the Age of Fifty - A Study of its Incidence and Natural History: Blood, XI: 883-900, October 1956)

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#### Treatment of Tuberculosis

With the advent of long-term chemotherapy and the resultant conversion of a large percentage of patients' sputums and gastric cultures, there were many optimistic opinions that the present antituberculous drugs would cure tuberculosis. D'Esopo and co-workers reported that when those patients, whose cultures had converted on streptomycin and PAS, were resected, it was difficult to grow tubercle bacilli from the resected specimens. However, acid-fast rods were present in a large number of these specimens, so the question arose: Are these tubercle bacilli dead or merely dormant? Six months after stopping chemotherapy, a significant percentage of the negative nonresected patients with open cavities had become reactivated.

This article evaluates the results of gastric culture before resection, and culture of resected specimens compared with the pathology of the specimens from patients who were operated on either during their first hospital admission or after reactivation.

Five characteristics of tuberculosis make it particularly difficult to treat: (1) the tendency of tubercle bacilli to become resistant to any known antibiotic when they can continue to multiply in the presence of small concentrations of the drug; (2) the tendency of blood vessels in the disease area to become obliterated, which in turn further decreases the concentration of drugs where they are most needed; (3) the tendency of the disease to produce destruction of tissue known as caseation which has no blood supply and the drugs cannot diffuse into it in sufficient quantity to be bacteriocidal; (4) the tendency of tubercle bacilli to be present inside of macrophages so that any

antibiotic, such as streptomycin which does not penetrate the cell membrane, is not effective; (5) the tendency to obstruct the normal drainage pathways—for example, bronchial stenosis or ureterostenosis. Because of these difficulties, a most careful evaluation of each patient is necessary if the tools available today in chemotherapy and resection are to give the best possible results.

From the analysis of bronchoscopy and pathology, it is impossible to determine which specimens will be positive on culture. It is also impossible to distinguish between those patients with negative gastrics and negative pathology on culture and those patients who reactivated. It has been the authors' policy to resect pulmonary lesions at the end of 3 or 4 months of combined therapy before the emergence of drug-resistant organisms which increase the complications of resection. Resection is done on the basis of the particular type of pathology seen in routine anteroposterior tomographs taken after 3 months of combined chemotherapy, plus the results of bronchoscopy using right-angle and Foroblique telescopes if there is question of endobronchial disease. All bronchial stenosis and bronchiectasis should be resected. All large caseous foci over 2 cm. in diameter and all thick-walled cavities should be resected.

Drug therapy in any combination will not convert all patients. Even though drug therapy may convert gastric and sputum cultures, it is no indication that the lesion is sterile because (1) 12% had positive cultures of their specimens, (2) 11% had positive smears of their specimens, and (3) 11% reactivated.

The three-drug combination will convert a larger percentage of patients than any two-drug combination.

The types of pathology which are not sterilized by chemotherapy are (1) walled cavitory disease, (2) caseous masses over 2 cm. in diameter, and (3) bronchial stenosis and bronchiectasis. Caseous disease with a bronchial connection which is manifested by positive cultures before drug therapy is started, is as dangerous a lesion as open cavitation.

Apparently, combined chemotherapy is less effective in extrapulmonary tuberculosis than in pulmonary disease. Using equipment and techniques available only in a tuberculosis hospital—that is, good culture methods—anteroposterior tomographs and bronchoscopy using right-angle and Foroblique telescopes, it is possible to determine which patients will require more than combined chemotherapy alone.

If resectional surgery is indicated, it should be done 3 to 4 months after starting combined chemotherapy. The acid-fast rods found in pathology specimens are viable virulent tubercle bacilli and if not removed surgically will result in reactivation. Drug therapy is merely a tool in the treatment of tuberculosis, effective for a limited time, and if not properly used, the patient will have lost the opportunity for successful resection. (Allen A. R., *Why Drugs Are Not Enough in the Treatment of Tuberculosis*: Arch. Int. Med., 98: 463-466, October 1956)

### Postoperative Pancreatitis

Acute pancreatitis occurring as a postoperative phenomenon is a serious and often disastrous complication. Most commonly, it follows biliary tract or gastric operations, but occasionally it occurs after splenectomy and in rare instances, after operations in which there has been no possibility of direct injury to the pancreas or interference with its blood supply. Although relatively infrequent, it has been an important factor in the mortality of biliary tract and gastroduodenal surgery. Unfortunately, there is no clear understanding of the pathogenesis of pancreatitis in this form. It is possible that a different mechanism or a combination of more than one is responsible under varying situations.

The diagnosis in all cases has been made on the basis of significant elevations of the serum amylase values or operative or postmortem findings. The classical manifestations of the disease are often masked by the postoperative state and such signs as abdominal pain, ileus, and shock are not specific and, hence, must be interpreted carefully. The serum amylase determination is often helpful only in the first two or three postoperative days, because in many instances of pancreatitis, this level returns to normal within such a period. A mild elevation of the amylase value without other evidence does not necessarily imply pancreatitis and the diagnosis is probably not justified on this basis alone.

When the process is severe, the development of a serious intraabdominal complication is obvious, though the exact diagnosis may not be apparent unless pancreatitis is suspected and an elevated serum amylase level is found. Persistent ileus with distention is common. Vomiting may occur if gastric suction has been discontinued. Failure to pass flatus or stool may be noted, or paradoxically, diarrhea may exist. Severe abdominal pain has not been prominent in all cases, though moderate distress is usual and back pain is an occasional complaint. The patient may be more comfortable lying on his side with his back flexed and his knees drawn up. On examination, a soft distention is a frequent finding. Tenderness of some degree in the upper abdomen is elicited, but often is not striking and may shift from day to day. The development of a palpable upper abdominal mass and icterus are signs which become apparent in some cases. Shock and renal shutdown are not infrequent in severe cases and indicate a most unfavorable prognosis.

The significance of postoperative pancreatitis is perhaps best measured by its importance as a cause of death in biliary tract and gastroduodenal surgery. In a recent 6-year period at Ohio State University Hospital, Columbus, six of thirteen deaths following biliary tract operations were associated with postoperative pancreatitis.

Postoperative pancreatitis ranks as a significant cause of death in upper abdominal surgery, particularly following operations on the biliary tract and stomach. Recognition of the complication on clinical criteria alone is often difficult, and reliance on the serum amylase test postoperatively is recommended.

Irrigation of the common bile duct in an effort to dislodge calculi is postulated as a reasonable mechanism of producing acute pancreatitis under anatomical circumstances which permit reflux of fluid up the main pancreatic duct under pressure.

The possible dangers of a severe pancreatitis developing as a consequence of damage to the duct of Santorini during duodenal mobilization, of direct trauma to the pancreas, or of interference with the pancreatic blood supply should be fully appreciated by those performing gastroduodenal surgery.

Safety measures to circumvent the threat of causing an acute pancreatitis merit application when a possibly hazardous operative maneuver in this connection is contemplated. (Boles, E. T., Jr., Postoperative Pancreatitis: Arch. Surg., 73: 710-717, October 1956)

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#### Operation for Urinary Diversion

A period of 2 years and 9 months has elapsed from the time of the first application of this new procedure to the present. This article summarizes briefly results and changes in surgical technique instituted by the author since performing the initial case and the rationale for such changes.

The need for this procedure is known to every urologist—to divert the urine in such a way as to completely separate the urinary and fecal stream and at the same time provide complete volitional control of both feces and urine. The criteria for ideal urinary diversion are exacting and are met only in this procedure and as yet in no other. They are: (1) continence and voluntary control of both urine and feces. This means absolute voluntary control requiring no catheterization or wearing of any appliances; (2) complete separation of the urinary and fecal streams; (3) a functional urinary reservoir where reabsorption of urinary constituents will not occur; (4) no artificial orifice in an unnatural site, disfiguring or traumatizing the patient; (5) conditions permitting total cystectomy if indicated; (6) accessibility of the new urinary reservoir to easy cystoscopic examination.

In essence, the scheme of operation is: (1) anastomosis of the ureters to the isolated rectum through an abdominal incision; (2) dissection of the sigmoid mesentery to lengthen and liberate the sigmoid (fecal stream); (3) through a perineal incision, immediately anterior to the anus, a plane of dissection is carried under the external sphincter ani muscle to the rectovesical pouch; (4) the liberated sigmoid is drawn under the external sphincter ani muscle and out the perineum.

The final result is two perineal openings, separate but adjacent. The anus, or urinary outlet, is immediately posterior to the perineal sigmoid stoma, or new rectum. Both orifices are encircled by, and are under, the voluntary control of the external sphincter ani muscle.

In this series by the author and his collaborators, seventeen cases have been performed. They include diversion alone, diversion with total cystectomy, diversion with partial cystectomy, diversion with radium, and radiation therapy. In the seventeen cases, there have been three surgical mortalities. Statistics are deceptive and the author believes that the evidence proves the procedure to be much safer than the mortality figures indicate, for two reasons: All cases were for carcinoma (usually advanced) and most of the patients were poor surgical risks. The three mortalities occurred in the first five cases and the first two are still alive. With improved technique and surgical speed, it is noteworthy that, following the last mortality, all of the twelve cases performed have had uneventful recoveries.

Functional results have been uniformly good. The series has been confined to bladder carcinoma (usually advanced), but regardless of the primary lesion, all patients have continence and voluntary control of both feces and urine. The proof of this is that no appliances are necessary. No abnormal opening may be seen on the patient while standing or walking in the nude, nor is he conscious of one.

Urinary control is usually immediate. After catheters are removed, the patient walks and voids without losing any urine. Two cases complained of enuresis on occasion.

The crucial test, however, is fecal control. Fecal control requires some learning and follows urinary control, usually by two weeks. It is probable that the intrinsic muscles of the anus with an established habit pattern take over immediately. Control of defecation will be delayed by watery or unformed stools. This situation is temporarily desirable for reasons of comfort. In cases of constipation, a morning rectal irrigation has been sufficient in every case. No patient has had involuntary loss of formed stool after establishing his pattern of defecation. (Johnson, T.H., Further Experiences with a New Operation for Urinary Diversion: J. Urol., 76: 380-386, October 1956)

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### Pheochromocytoma

Pheochromocytoma, a tumor of the chromaffin tissue that secretes pressor amines, is not common, but is being diagnosed more readily today than formerly. The safe removal of these tumors often makes a correct preoperative diagnosis a lifesaving measure.

In this article, the authors review briefly the clinical features of pheochromocytoma, appraise and evaluate the tests used as an aid in diagnosis, and discuss some of the difficulties encountered in arriving at diagnosis, the surgical aspects of the condition, and postoperative care.

The authors state that perhaps too much attention has been directed toward a relatively rare clinical entity, but doubt that this is true, because the

current literature indicates an apparent increase in the diagnosis of this tumor. They believe that this increase is due to the fact that the syndrome produced by the tumor is being thought of more commonly and that this increasing interest has been due to tests that have become available to determine whether this tumor is present. Pheochromocytomas cause the most curable type of surgically treated hypertension and they are most curable if the tumor can be detected early enough before it produces secondary cardiovascular damage and even death.

The histamine test, if performed properly and always in conjunction with the cold pressor test, will yield evidence on which to base a diagnosis of pheochromocytoma causing paroxysmal hypertension in most cases. It is more reliable than the tests of tetraethyl-ammonium chloride and methacholine chloride. The authors have found it safe in their hands.

Regitine is a valuable drug for screening patients with sustained hypertension who are suspected of having pheochromocytoma. Obviously, it cannot be used on all patients complaining of hypertension. It probably is not necessary to use it on obese patients, because the authors have yet to see an obese patient with pheochromocytoma. However, it should be used on all young patients with hypertension, on those with a short history of hypertension, and those with hypertension group 3 or 4, or severe group 2. Certain precautions must be considered before the test is performed. Piperoxan can be used in a fashion similar to that of Regitine.

If tests with these drugs fail to settle the question of whether a patient has pheochromocytoma, estimation of the pressor amines in the blood at the level of the highest blood pressure will clinch or disprove the diagnosis. Technical difficulties at this time make it impossible to test all patients with hypertension for pressor amines as a routine. Perhaps that time will come. Until then, stressing the importance of pheochromocytoma and diagnosing it when it exists deserve the attention of all physicians. Results of surgical treatment are gratifying in virtually all cases and sometimes are lifesaving if the tumor is not malignant and has not metastasized. (Kvale, W. F., et al., Pheochromocytoma: *Circulation*, XIV: 622-629, October 1956)

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#### Surgical Treatment for EPTE Defects

A letter from the Commanding Officer of a Naval Station requested information regarding the Navy's policy on corrective surgery for conditions existing prior to entry into service. In reply, the Surgeon General set forth the policy as follows:

"As a general rule, there is no indication for the surgical correction of pre-existing defects which do not interfere with the member's ability to perform his duties. If the defect does impair his ability to a material

degree, then, of course, it is essential that the probable results of surgery be determined on a conservative basis. If it cannot be anticipated that the surgical procedure will restore the member to full duty within a reasonable period of time, the procedure is contraindicated; and if the individual is considered unfit, action should be initiated to separate the individual from service. Also, if surgery would only partially correct the defect, surgery should not be done. When the procedure may be expected to return the member to full duty within a reasonable period of time, corrective surgery, if otherwise indicated, is wholly proper. Likewise, if necessary to save life or limb or prevent undue suffering, surgical correction of pre-existing defects may be done. "

(PQ & MR, BuMed)

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Medical Intelligence Reports  
(Med-3820-1)

The attention of all Medical Officers, particularly those serving at sea or on foreign shore, is invited to the requirements of Article 23-124, Manual of the Medical Department. Compliance with this article is of great importance to the Navy Medical Department and the Navy as a whole.

(Bureau of Medicine and Surgery)

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Reimbursement for American Specialty Board Fees  
and Short Course Registrations

This is to caution all officers against incurring expenses in connection with American Specialty Board application and examination fees, and in paying registration fees for attendance at postgraduate short courses, prior to having obtained Bureau authority to do so. Where expenditures are made prior to Bureau permission, reimbursement is not possible.

BuMed Instruction 1500.4A of 6 January 1954 gives the routine to be followed in the case of American Specialty Board examinations. BuMed Instruction 1520.8 of 6 February 1956 furnishes guidelines for requesting Bureau sponsorship of postgraduate short courses. Requests for permission to participate in Board examinations and to attend short courses, must be forwarded sufficiently in advance of the commencement date, to permit Bureau authorization being obtained before the expenditure of funds.

(ProfDiv, BuMed)

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Nursing Education Program for  
Hospital Corps Waves

A mid-term class is planned for those qualified applicants in the Nursing Education Program during fiscal year 1957. Eligible and interested candidates should submit applications in accordance with BuPers Instruction 1120.27 of 28 June 1956 as soon as possible.

Para. 2, Eligibility, subparagraph g. of the basic instruction has been revised to read as follows:

Service and Active Duty - Must be an enlisted member of the Hospital Corps, Group X and XI, Regular Navy or Naval Reserve on active duty, who has been on active naval service for a minimum of one year, six months of which must have been on ward duty engaged in the care of patients under the immediate supervision of a Nurse Corps Officer who can report on the applicant's aptitude for nursing. In the case of Group XI applicants, waiver of ward experience requirements may be requested if accompanied by adequate references, including reference from the Chief Nurse, or appropriate Nurse Corps Officer.

(Nursing Division, BuMed)

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Board Certifications - Inactive

American Board of Internal Medicine

LT Lesem J. Baer MC USNR  
LCDR Charley F. Gutch MC USNR  
LT Wayne L. Hoseth MC USNR  
LTJG Roland D. Miller MC USNR  
LTJG Robert K. Nixon MC USNR

American Board of Obstetrics and Gynecology

LT Schuyler M. Bissell MC USNR

American Board of Ophthalmology

LT Edward N. McLean MC USNR  
LT Richard E. Meyer MC USNR

American Board of Orthopedic Surgery

LCDR Kenneth W. Olshausen MC USNR  
LT John G. Yost MC USNR

American Board of Pathology

LT "H" Frank Holman MC USNR  
LT Gale R. Richardson MC USNR

American Board of Plastic Surgery

LT Jerome R. Klingbeil MC USNR  
LTJG Jay V. Stanger MC USNR

American Board of Preventive Medicine

CDR John F. Shrouts MC USNR

American Board of Psychiatry and Neurology

LT Edward A. Cary Jr. MC USNR in Neurology  
LT Emile P. Eckart Jr. MC USNR in Psychiatry  
LT Paul G. Ecker MC USNR

American Board of Surgery

CDR Donnell C. Howe, Jr. MC USNR

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"Take It Easy"

Six hundred and one (601) men in the naval forces suddenly met their Maker as the result of motor vehicle accidents in 1955. In the Navy and Marine Corps, such accidents now outnumber deaths from disease by more than 2 to 1.

To the 601 Sudden Deaths must be added 389 naval personnel who were invalidated from the service as a result of traffic smashups. There were 6792 additional cases of "minor" (?) trauma. This makes a Grand Total of 7782 hospital admissions for highway accidents last year. But since each survivor remained on the sicklist an average of 41 days, this adds up to a total loss of 320,000 man-days "down the drain."

The minimum cost to the Government of this carnage of military personnel on the highway was more than 34 million dollars. This tremendous expense and needless suffering are utterly indefensible and inexcusable, but they are "peanuts" compared to the stark fact that: Last year the sudden death rate from traffic accidents in the Navy and Marine Corps increased 29%. Why? You figure out the answer and base your reasoning on the following critical criteria:

Eighty-eight percent (88%) of the serious injuries and preventable deaths occurred during off-duty hours, on liberty, leave, et cetera. The greatest accident toll was wracked up on Saturdays, Sundays, and Mondays; the

majority of fatal accidents were recorded in the summer and autumn months (long weekends).

The highest number of fatalities occurred in personnel between the ages of 20 and 24 years; age 25 to 29 ranked second and those under 20 years, third. (In which age bracket are you?)

Diagnoses on admission to the Sick List as a result of motor vehicle highway accidents were 2475 fractures (fractures of the long bones, vertebrae, skull, and concussion of the brain, 32%). Lacerations caused by broken glass in 19% of the cases, and "Injuries, Multiple, Extreme" (Dead on Arrival at a hospital), 11%.

Don't take the attitude that "It can't happen here." This is the most fallacious of all fallacies. It could happen without notice to you or to the members of your family and it might happen just once. Under such horrible circumstances and in the face of such hideous statistics, "once" is more than enough. Once is too much and too often.

Don't try to go too far, too fast, in too short a time. The dice are loaded and the cards are stacked against you before you start.

So TAKE IT EASY and stick around. We need each other for a long time to come.

(Captain C. C. Shaw MC USN)

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#### From the Note Book

1. The Surgeon General of the Navy, Rear Admiral B. W. Hogan, is accompanying the Honorable Frank B. Berry, Assistant Secretary of Defense, Health and Medical, on a survey and tour of countries in Europe and the Middle East. (TIO, BuMed)
2. In a ceremony which was held, November 15, 1956, at Alexandria, Va., a new high school was dedicated to the memory of Navy Hospitalman Francis C. Hammond (deceased), Medal of Honor winner. Rear Admiral I. L. V. Norman, MC USN, Assistant Chief of the Bureau of Medicine and Surgery, and Captain W. C. Calkins, Director and Chief of the Medical Service Corps of the Navy, participated in the dedication. (TIO, BuMed)
3. Captain M. M. Driskell, MC USN, Chief of Medicine, U. S. N. H. Newport, R. I., has been awarded a Fellowship in the American College of Cardiology. (TIO, BuMed)
4. CDR G. W. Hyatt, MC USN, Officer-in-Charge of the Tissue Bank, NNMC, Bethesda, Md., was interviewed on the Mark Evans TV Show,

Station WTOP, on 8 November 1956, regarding the Tissue Bank and its operation. (TIO, BuMed)

5. Doctor H T. Karsner, Medical Research Advisor to the Surgeon General of the Navy, has recently been elected a member of the New York Academy of Sciences. (TIO, BuMed)

6. A seminar for commanding officers or their representatives of Naval Reserve Medical and Dental companies convened at the Bureau of Medicine and Surgery, 29 October - 3 November 1956. This seminar was conducted to provide indoctrination and orientation into the organization and administration of the Naval Reserve program from the departmental level. Twenty-six officers attended the seminar. (ResDiv, BuMed)

7. The 41st International Assembly of the Interstate Postgraduate Medical Association of North America recently awarded the Bureau of Medicine and Surgery a First Place Award in recognition of the excellence of teaching material provided physicians in attendance which could be translated into improved care of their patients. (TIO, BuMed)

8. The Dental Service staff of the U.S. Naval Hospital, Philadelphia, Pa., were hosts to sixteen members of the Odonto-Chirurgical Society of Philadelphia at the latter's annual all day meeting on 16 October 1956. (USNH, Philadelphia)

9. The A.D.A. and seven of its officials have been named defendants in a law suit for \$100,000 damages filed by Dr. R.J.H. Mick. Dr. Mick, who for several years, has actively opposed water fluoridation, charged that statements and articles in A.D.A. publications relating to fluoridation contained "false and libelous statements" regarding the plaintiff. (A.D.A. News Letter, 25 October 1956)

10. The oral surgeon contemplating surgery on a diabetic patient should be cognizant of the therapeutic problems confronting the internist in the medical management of the patient. The awareness of diabetic therapy potentiates accurate treatment planning which conforms with the need and requirements of the diabetic patient undergoing surgery. (O.S.O.M. & O.P., October 1956; E.E. Howard, M.D., R.H. Marlette, D.D.S.)

11. The use of potentially dangerous agents in acute coronary occlusion without clear indication is not justified. It is the physician's responsibility to be as aware of the hazards as the triumphs of modern therapy and to utilize such knowledge in the choice of specific measures for the individual case. (Am. J. Med. Sci., October 1956; H. T. Russek, M.D.)

12. Each pathologic variety of leukemia has its own distinct age incidence curve. The lymphatic forms appear to be more sharply associated with the extremes of life than do the myeloid varieties. Acute lymphatic leukemia appears at a younger age than does acute myeloid leukemia and the chronic lymphatic form appears at an older average age than the chronic myeloid variety. (Blood, October 1956; B. MacMahon, D. Clark)

13. A review of the anatomy, etiology, diagnosis, and treatment of the superior vena cava syndrome is presented. The major etiologic factor is bronchogenic carcinoma, 10 - 15% of which have superior vena cava obstruction with generally hopeless prognosis. (Dis. Chest, October 1956; E. A. Calkins, M. D.)

14. Twenty consecutive cases of various types of pelvioureteral obstruction, repaired by pelvic and ureteral excision and reanastomosis, are presented in J. Urol., October 1956; Captain J. S. Hanten MC USN; Captain B. S. Talbot MC USN; CDR E. M. Tomlin MC USN.

15. Experience with retrograde aortography in 86 cases at the Stanford University Hospital is summarized and evaluated in Circulation, October 1956; H. L. Abrams, M. D.)

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#### Recent Research Projects

##### Naval Medical Research Institute, NNMC, Bethesda, Md.

1. In Vitro Studies of the Influence of Corticotropin, Somatotropin, Thyrotropin, and Gonadotropin on Adrenal Steroidogenesis. NM 006 012.04.102, 27 July 1956.
2. Serologic Reactions in Schistosoma Mansonii Infections. NM 005 048.02.35, 27 July 1956.

##### Naval Medical Research Unit No. 4, Great Lakes, Ill.

1. Modified and Accelerated Method for the Study of Serum Constituents. NM 005 051.14.18, 2 July 1956.
2. Comparative Antibody Response to Intracutaneous and Subcutaneous Vaccination with Influenza Vaccine. NM 005 051.06, 2 July 1956.

##### Naval Air Development Center, Johnsville, Pa.

1. Utilization of a System of Gimbals on the Human Centrifuge for the Control of Direction of Acceleration with Respect to the Subject. Report

No. 4. NM 001 100 303, 2 August 1956.

2. Relationships Between Oculogyral Illusions and Nystagmus. Report No. 1. NM 001 111 302, 24 August 1956.

3. Forces Developed on a Car Traveling Radially Along a Moving Centrifuge Arm. Report No. 5. NM 001 100 303, 4 September 1956.

4. The Effect of Pain on Performance. Report No. 10. NM 001 103 301, 19 September 1956.

5. Arterial Blood Pressure Responses to G Forces in the Monkey. Report No. 3. NM 001 100 315, 24 September 1956.

Naval Medical Research Laboratory, Submarine Base, New London, Conn.

1. Tritanomalous Vision as a Threshold Function. Report No. 274. NM 002 014.09.06, 16 July 1956.

2. Photometric Survey of the Red Lighting Installation on the USS SEAWOLF. Memorandum Report No. 56-6. NM 002 014.08.13, 24 September 1956.

Naval School of Aviation Medicine, NAS, Pensacola, Fla.

1. The Perception of the Vertical. XIII: An Investigation of Quadrant Differences. Joint Project Report No. 39. NM 001 110 500, 18 May 1956.

2. The Perception of the Vertical. XIV: The Effect of Rate of Movement on the Judgment of the Vertical. Report No. 40. NM 001 110 500, 22 May 1956.

3. A Fat Tolerance Test. Report No. 7. NM 001 107 102, 25 June 1956.

4. The "Boiling" Phenomenon of Living Tissue at Low Atmospheric Pressure. Report No. 1. NM 001 103 100, 9 July 1956.

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BUMED INSTRUCTION 4100.1A

18 October 1956

From: Chief, Bureau of Medicine and Surgery

To: All BuMed Management Control Activities

Subj: Conservation and Utilization of Material Resources Program;  
Report symbol EXOS-4100-1

Ref: (a) NavRegs Art. 0717

Encl: (1) Action by BuMed Management Control Activities on "Report on Material Conservation and Utilization," Report symbol EXOS-4100-1

(2) Sample Format for Reporting Progress of Conservation Program

This Instruction:

- a. Implements the DOD and SECNAV policies governing the conservation, utilization, and disposal of material.
- b. Restates the assignment of responsibility for coordination and implementation of the Navy-wide Conservation and Utilization of Material Resources Program.
- c. Emphasizes the necessity for conservation of money, manpower, and materials.
- d. Provides a uniform method of reporting.

BuMed Instruction 4100.1 (formerly 4890.1) of 23 April 1953 is canceled.

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BUMED NOTICE 6230

23 October 1956

From: Chief, Bureau of Medicine and Surgery

To: All Ships and Stations

Subj: FSN 6505-299-8268, Globulin, Poliomyelitis, Immune, Human, 10cc.  
instructions concerning disposition of

This notice informs addressees of the discontinuance of the use of subject item

BuMed Instructions 6230.3 (Notal), 6230.4 (Notal), 6230.5, 6230.6 and 6230.6  
Sup-1 are canceled.

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BUMED NOTICE 6470

30 October 1956

From: Chief, Bureau of Medicine and Surgery

To: All BuMed Managed Activities

Subj: Regulations on the use of radioisotopes

Ref: (a) NavMed P-1325, Radiological Safety Regulations

(b) "The Medical Use of Radioisotopes: Recommendations and  
Requirements by the Atomic Energy Commission," February  
1956 - available on application to BuMed (Code 74)

This notice clarifies the existing regulations in references (a) and (b) with regard to procurement and use of radioisotopes in naval medical activities.

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BUMED INSTRUCTION 1416.3 Sup-1

31 October 1956

From: Chief, Bureau of Medicine and Surgery  
To: Ships and Stations Having Medical Corps, Dental Corps, Nurse Corps, and Medical Service Corps Personnel Regularly Assigned  
Subj: Professional fitness for promotion of Naval Reserve officers of the Medical Department

This instruction exempts Naval Reserve officers of the Medical Department on inactive duty from the provisions of BuMed Instruction 1416.3, during the remainder of fiscal year 1957.

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BUMED NOTICE 11240

1 November 1956

From: Chief, Bureau of Medicine and Surgery  
To: Distribution List  
Subj: Fiscal year 1958 requirements for ambulances and special medical and nonpassenger carrying vehicles; materials handling equipment; and construction, fire-fighting, utility, and weight handling equipment  
Ref: (a) BuMedInst 11240.1 of 6 Oct 1952, Subj: Ambulances under BuMed cognizance; policy and procedures concerning

This notice informs addressees of the seriousness with which the Bureau's action in the subject program is being viewed by budgetary review authorities and provides policy guidance and detailed instructions for a Navy-wide re-evaluation.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, 16 May 1955.

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**DENTAL****SECTION**

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Dental Corps Awarded ADA Certificate of Honor

The American Dental Association has presented a Certificate of Honor to the U.S. Navy Dental Corps for having won the "Award of Merit" in the Scientific Exhibit Section of the Federal Agencies Division at the Annual Session of the American Dental Association held at Atlantic City, N. J., 1 - 4 October 1956.

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Changes in Dental Division

Captain A. R. Frechette DC USN assumed the duties of Head, Professional Branch, Dental Division, Bureau of Medicine and Surgery on 26 September 1956. He relieved Captain B. W. Oesterling DC USN who headed the Branch since 26 July 1954.

Captain J. P. Arthur DC USN assumed the duties of Head, Appointment and Qualifications Section, Personnel Branch, Dental Division, Bureau of Medicine and Surgery, on 15 October 1956. He relieved Captain E. J. Lofgreen DC USN who headed that Section since March 1953.

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Diplomates of the American Board of Prosthodontics

The following Navy Dental officers were recently certified as Diplomates of the American Board of Prosthodontics:

Captain M. H. Brown  
Captain C. M. Heartwell

Captain D. Henderson  
Captain A. L. McInturff

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### Dental Meeting in Lima, Peru

Captain C. E. Allen DC USN, Commanding Officer, U.S. Navy Dental Clinic, Naval Gun Factory, Washington, D. C., represented the Bureau of Medicine and Surgery, Department of the Navy, at the National Dental Congress of Maxillo-Facial Prosthesis held in Lima, Peru, during the period 19 - 22 September 1956. Captain Allen spoke before President Manuel Prado Ugarteche, President of the Republic of Peru, who formally opened the meeting, and many delegates from South American countries.

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### Naval Research in Dentistry

The Office of Naval Research supports dental research in universities and nonprofit organizations. Funds in excess of \$150,000 have been allocated to the following list of active projects:

<u>Institution</u>	<u>Investigator</u>	<u>Title</u>
Univ. of Illinois	I. Schour	Preservation of Permanent Teeth in Humans
Univ. of Oregon	D. M. Hadjimarkos	Influence of Environmental Factors on Dental Caries
Columbia University	B. M. Levy	Development of Histo- and Cyto-chemical Techniques for Use in Studying Dental Tissue
Harvard University	J. H. Shaw	Studies on the Prevention of Tooth Decay
Univ. of Michigan	F. A. Peyton	Dental Materials
College of Physicians and Surgeons, San Francisco, Calif.	L. S. Smith	Relationship Between Infection and Pathology in the Apical-Periapical Region
Columbia University	N. W. Chilton	Statistical Methods Appropriate for Dental Research Workers

<u>Institution</u>	<u>Investigator</u>	<u>Title</u>
Univ. of Southern California	L. A. Bavetta	Effects of a Single Amino Acid Deficiency on Tooth Development
Georgetown University	W. C. Hess	Proteins and Mucopolysaccharides of Teeth
Cornell University	C. M. McCay	Dietary and Other Factors Concerned in Mouth and Tooth Deterioration
College of Physicians and Surgeons, San Francisco, Calif.	H. M. Leicester	Mechanism of Phosphatase Inhibitors in Caries Prevention
Jewish Hospital of Brooklyn	A. E. Sobel	Mechanism of Calcification and the Caries Process
Tufts University	V. F. Lisanti	Salivary Substances Related to Oral Diseases
Univ. of Alabama	W. Pigman	<u>In Vitro</u> Study of Dental Caries in the "Artificial" Mouth
Library of Congress	C. R. Brown	Oral Bibliography
Univ. of Chicago	F. J. Orland	Use of Germfree Animals in the Study of Dental Caries
Univ. of California	S. S. Elberg	Oral Microorganisms
Tufts University	Z. Hadidian	Salivary Hyaluronidase: Its Source and Relationship to Oral Diseases
Massachusetts Institute of Technology	R. S. Harris	Effects of Inorganic Components of Foods on Caries Incidence
Univ. of Pennsylvania	N. B. Williams	Oral Microorganisms

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## MEDICAL RESERVE SECTION

### Requirements for Promotion of Inactive Reserve Officers Held in Abeyance

BuMed Instruction 1416.3, dated 12 May 1956, is no longer applicable to the promotion of Reserve Medical Department officers on inactive duty during the remainder of fiscal year 1957. Naval Reserve Medical Department officers on inactive duty will continue to receive full credit for satisfactory completion of appropriate BuPers and BuMed Correspondence Courses during the remainder of fiscal year 1957. It is anticipated that a revised professional fitness for promotion instruction concerning both inactive and active duty Reserve Medical Department officers will be promulgated prior to 1 July 1957. (BuMed Instruction 1416.3 Sup-1, dated 31 Oct 1956)

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### New Curriculum Now Available

A new curriculum for Naval Reserve training of Hospital Corpsmen Third Class (NavPers 92410) is now available and is being distributed for use by Hospital Corps divisions and at Naval Reserve activities where a formal training of Reserve Hospital Corpsmen is being conducted. This curriculum, developed jointly by the Eleventh Naval District, Bureau of Medicine and Surgery, and the Bureau of Naval Personnel, consists of 48 drills, each drill of two 60-minute training periods. Six drills have been allocated for team training with the provision that instruction can be accomplished through curricula to be prepared at a local level dependent upon facilities and equipment available. This curriculum features the following:

1. Introduction. Describes the curriculum and states what it is intended to do; what its objectives are.
2. Table of Qualifications. A list of all the professional practical factors and examination subjects required for advancement in the rate covered in the curriculum. The qualifications from the Manual of Qualifications for Advancement in Rating, NavPers 18068 (Revised) are cross-indexed with topics to which they apply.
3. Training Period Outlines. The topics listed herein are for periods of instruction that may vary from 45 to 60 minutes in length. A drill consists of two training periods conducted in the same evening. The text,

reference assignments, training aids, and equipment listed will aid the instructor in preparing the lesson plan for each period or drill.

4. Bibliography. A master list of texts and references used in the curriculum.

5. Training Aids. A master list of training films and non-film training aids referred to in the curriculum.

6. Equipment List. A master list of equipment referred to in the curriculum

This curriculum is designed to train hospitalmen in the HM ratings, specifically, in the duties, skills, and responsibilities of the Hospital Corpsmen Third Class. It has been approved for use in the Naval Reserve and may be utilized upon receipt.

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#### Promotion Points Through Officers School Courses

Naval Reserve Officers Schools offer certain courses to inactive Reserve Medical Department officers as a means of earning both retirement and promotion point credits. Courses consist of 20 drills a semester and 2 semesters comprise an academic year; classes are held September through June of the following year. The Naval Reserve Officers School program is non-pay requiring a minimum of 80% attendance at scheduled drills. Reserve officers in good standing may enroll and Reserve officers who are members of a Reserve unit may also participate in this training. Annual active duty for training with pay is available to all officers enrolled in NROS.

The following courses are available to inactive Reserve Medical Department officers:

<u>Course Number</u>	<u>Title</u>	<u>Number Drills</u>	<u>Promotion Points</u>
180	Leadership	20	6
181	Personnel Administration	20	6
182	Military Justice	40	12
183A	Administration of Education	20	6
184	Public Relations	20	6
185	Security of Classified Matter	20	6
301	Organization for National Security	20	6
401	International Relations	40	12
402	International Law	40	12

In addition to promotion points awarded for completion of courses, 12 additional promotion points are awarded for satisfactory participation in NROS.

Inactive Reserve Medical Department officers desiring to enroll in NROS should contact the Medical Reserve Program Officer of their naval district.

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Promotion Point Requirements for Officers -  
Fiscal Year 1957

Reserve officers who are in a promotion zone for fiscal year 1957 must earn an average of 24 promotion points for each year in grade to qualify professionally for promotion. In order to be considered by a selection board, however, one-half of these promotion points must have been earned by 1 July 1956.

Thus, if you need 120 points to qualify professionally for promotion, you must have earned at least 60 of these points before 1 July. This requirement is in addition to that of earning at least 12 retirement points during fiscal year 1956. If you are selected, you must earn the remaining promotion points before you can accept your promotion.

Promotion points required by all officers in fiscal year 1957 promotion zones follow:

<u>Date of Present Rank*</u>	<u>Points Required To be Considered</u>	<u>Points Required to Qualify Professionally</u>
1 Jul 1950 or earlier	72	144
2 Jul 1950 to 1 Jul 1951	72	144
2 Jul 1951 to 1 Jul 1952	60	120
2 Jul 1952 to 1 Jul 1953	48	96
2 Jul 1953 to 1 Jul 1954	36	72
2 Jul 1954 to 1 Jul 1955	24	48
2 Jul 1955 to 1 Jul 1956	12	24
2 Jul 1956 to 1 Jul 1957	0	0

\* Or date of acceptance of original appointment in the Naval Reserve if after date of present rank.

(The Naval Reservist)

\* \* \* \* \*

Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.



## PREVENTIVE MEDICINE SECTION

### Occupational Health

The following list provides a ready reference to current BuMed instructions and regulations pertaining to the Navy's Occupational Health Program.

#### General

1. BuMed Instruction 6260.1 of 8 October 1952 is addressed to activities under the management control and financial responsibility of the Bureau of Medicine and Surgery. The purpose of this instruction is to provide a background on the occupational health program; to set forth the role of the program in the reduction of absenteeism due to occupational illnesses and injuries; and to provide a uniform policy for the proper administration, coordination, and reporting of the occupational health and safety programs at these activities.

#### Radiological Defense

2. Radiological Safety Regulations - NavMed P-1325, issued in 1951 and now being revised, outlines safe standards and protective measures for personnel exposed to ionizing radiation.

3. BuMed Instruction 6470.2 of 29 October 1952 promulgates instructions for the collection of air and breath samples for radon content from personnel in the Department of the Navy who work with radium.

#### Toxic Materials

4. BuMed Instruction 6260.4 of 24 January 1955 outlines measures needed for the control and issue of toxic materials.

5. BuMed Instruction 6200.5 of 17 July 1953 deals with carbon tetrachloride and other chlorinated hydrocarbons.

6. BuMed Instruction 6260.5 of 7 November 1955 lists the Threshold Limit Values for toxic materials.

7. BuMed Instruction 6200.4 of 14 May 1953 provides information concerning the effects of, and recommends precautionary measures intended to prevent, deliberate or accidental ingestion of methyl alcohol.

8. SecNav Instruction 6260.2 of 7 November 1955 on Potentially Toxic Materials provides guiding policies for obtaining toxicity information

which will be utilized to protect the health of personnel who may eventually handle, or be exposed to, potentially toxic materials.

#### Hearing Conservation Program

9. BuMed Instruction 6260.6 of 13 December 1955 provides a general guide for the establishment of an effective hearing-conservation program designed to prevent hearing loss in personnel employed in areas of high noise intensity.

10. BuMed Instruction 6730.1 of 23 November 1953 promulgates information concerning the procurement, distribution, and fitting of noise protection ear plugs by medical department personnel.

#### Heat Casualties

11. BuMed Instruction 6260.2 of 27 July 1953 provides information on water and salt requirements for personnel subjected to high environmental temperature.

12. BuMed Instruction 6200.7 of 15 June 1954 provides information and guidance for the prevention of heat casualties.

#### Dermatitis Control

13. BuMed Instruction 6200.8 of 18 August 1955 emphasizes the need for prevention, and provides the measures which will reduce the incidence, of occupational dermatitis in military and naval civilian employees.

#### Reporting and Statistics

14. BuMed Instruction 6150.19 of 27 September 1956 provides for the preparation of a Uniform Civilian Personnel Health Jacket.

15. Chapter 23-21 MMD requires a monthly industrial health report (NavMed 576a) from all designated activities.

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#### Notes from the Occupational Health Branch

Health Program for Civil Service Employees. This is the title of a proposed new chapter to be placed in the Manual of the Medical Department. The new chapter has been cleared through field activities, naval bureaus and offices and is now on its final clearance through the various codes in the Bureau of Medicine and Surgery. It should be out soon.

Civilian Physicians. The program of employing civilian physicians in naval industrial type activities for care of naval civilian employees has progressed very well. Over the past 24 months eighty (80) civilian physicians have been employed. There are still some areas that are experiencing difficulty in obtaining applicants for these positions.

Industrial Hygiene Surveys Aboard Ship. A pilot study on industrial hygiene surveys aboard ship is getting under way in the San Francisco Bay Area. The studies will include various types of ships in an effort to determine the need for industrial hygiene surveys for the forces afloat. It is planned to promulgate the results of these studies on their completion to field activities.

Industrial Health Data Sheet (NavMed 576, Rev. 1951). This data sheet has been revised, and a Bureau of Medicine and Surgery Instruction concerning the subject has been written. Both should be published some time in the near future. The object of both the revision and the Instruction is to improve and facilitate reporting of occupational health data. The report has been reduced from four pages to two pages and changed from a monthly report to a quarterly report. Some changes will also be made in the Manual of the Medical Department, Chapter 23, Article 23-21.

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#### Control of Occupational Dermatitis

In distinguishing between occupational and nonoccupational dermatitis, the following considerations are important: (1) when and how the eruption started; (2) whether or not it was relieved by the absence of the individual from work; (3) whether or not it recurred when the individual returned to work; (4) whether or not it began on the areas exposed; (5) localization; (6) the results of patch tests with substances to which the worker is exposed; and (7) whether or not other workers are affected.

Among important measures for preventing occupational dermatitis are cleanliness, ventilation, and employee education. (Abstract from Industrial Hygiene Digest, August 1956, Vol. 20 No. 8, p. 9; R. J. Pierce, Safety Maintenance and Production, 112: 45-47, 57, July 1956)

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#### Treatment of Snake Bite

A recent research report from the Naval Medical Field Research Laboratory, Camp Lejeune, N. C., is of interest with respect to methods of treatment of snake bite. This report is entitled "Evaluation of the Tour-niquet-Incision and Suction Treatment of Snake Bite" (Special Report NM 005 052.08, August 1956). The investigators carried out a study of these treatment methods, basing their results on the interval between the injection of venom and death in laboratory animals, and using in their treatment the standard snake-bite kits as sold by various manufacturers. The results showed that when the animal was immobilized the survival time was increased over that of the animal allowed free activity. Moreover, application of a

tourniquet did not increase or decrease the advantages of immobilization alone. Furthermore, incision and suction accelerated the time of death. The venom used in the experiments was from Crotalus adamanteus, more commonly known as the diamondback rattlesnake.

These results support opinions of authorities in those parts of the world where snake bite is an acute problem who have condemned the tourniquet-incision method as being useless or even contraindicated and who hold that antivenin therapy is the only rational treatment.

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#### Prevention of Human Rabies - Erratum

In the article "Prevention of Human Rabies" which appeared in the October 5 issue of the U.S. Navy Medical News Letter, there is an error which has been called to the editor's attention by a Reserve Medical Service Corps Officer.

On page 35, the passage ". . . thorough wound cleansing with 1% Zephyran and 20% soft soap in liberal quantities . . ." should be corrected to read ". . . thorough wound cleansing with 1% aqueous zephiran or 20% soap solution in liberal quantities . . ."

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#### American Venereal Disease Association - 19th Annual Session

The 19th annual session of the American Venereal Disease Association will be held in the Department of Health, Education, and Welfare Auditorium, Independence Avenue between 3rd and 4th Streets, S. W., Washington, D. C. on April 25 and 26, 1957.

Navy Medical Department personnel planning to submit papers for inclusion on the program of this meeting should submit titles and abstracts to the Bureau of Medicine and Surgery (Attention: Code 72) prior to 15 December 1956. These will, if concurred in by the Bureau, be forwarded to the secretary-treasurer of the Association for consideration by the program committee.

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#### On the Usefulness of the Tuberculin Skin Test

An analysis of the usefulness of the tuberculin skin test was accomplished by examination of the data of several large country-wide surveys,

done by two physician-nurse teams carefully trained in uniform injection and reading techniques.

Results indicated that persons with tuberculosis are hypersensitive to tuberculin; 99.6% of these patients reacting to it in dosages of 0.0001 mg. of PPD. In persons who, so far as could be determined, had had no contact with tuberculosis, an increasing number of reactors occurred as increasing doses of tuberculin were used. Even among infants under 6 months of age (mostly newborns) 70% reacted to tuberculin when large enough doses were given. It is evident, therefore, that tuberculin is specific only with low doses and is nonspecific in large doses.

Therefore, it was recommended that a dose of 0.0001 mg. of PPD be employed for routine testing and that instead of using larger doses in doubtful reactors, the same dose be repeated.

The specificity of tuberculin has been reinforced by the discovery that lung calcifications are not all due to tuberculous infection, since the use of histoplasmin has revealed many are due to this fungus. Histoplasmin sensitivity varies by region in the United States, being most prevalent in the central part of the country where more than half of the population is infected.

By the use of tuberculin, it has been estimated that about one-third of the population is infected with the tubercle bacillus with rates varying widely by section (e.g., Kansas City, 30%; rural Minnesota 20%).

The annual average infection rate as based on conversion of the tuberculin from negative to positive in school children between kindergarten and first grade was 0.9% per year.

By checking the household contacts of those children who converted, 1.7% of new active previously undiagnosed cases of tuberculosis were found. The same percentage of new cases were found by tracing contacts of those children with originally positive skin tests.

Through the use of other antigens, such as blastomycin, coccidioidin, and histoplasmin along with the tuberculin, the knowledge of the epidemiology of such diseases can be helpfully supplemented. (Furcolow, M. L., On the Usefulness of the Tuberculin Skin Test: Am. J. Pub. Health, 46: 1064-1073, September 1956)

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#### DEW Line for TB - Tuberculin Testing

Canada's death rate from tuberculosis for 1955 was 8.9 per 100,000, or just 20% of the rate 10 years earlier (actual deaths were 5546 in 1945 and 1382 in 1955). There was not a proportionate drop in incidence. Between one-fifth and one-fourth of the new cases were in individuals between 15 and 24 years of age—a fact which brings out the need for early case finding. The tuberculin test is suggested as a means of discovering tuberculosis in its early stages. Halifax has already launched a program for the periodic

tuberculin testing of the city's 17,000 school children. This city plans to repeat the test with regularity so that if and when a child converts from negative to positive there will be a time limit on when the exposure can have taken place. The chances of finding the contact will be immensely better when the time is narrowed to a period of months instead of years. Reporting on this, Dr. C. J. W. Beckwith said "the positive tuberculin reactors of 1955 do not indicate when infection took place. The negative tuberculin reactors of 1955 indicate these were not infected at the time the tuberculin test was done. However, since it is conceded that new cases develop, and that known cases reactivate, it follows that many unknown sources of tubercle bacilli occur in the population. Therefore, it is as important to report the tuberculin test yearly in these organized groups in school as it is to x-ray the adults."

Dr. Beckwith pointed out that routine tuberculin testing revealed 4.2% of the pupils without assumed exposure were positive reactors. Here then is a group "who hold a potential of disease." The need for increased use of tuberculin testing in schools throughout Canada was stressed at the annual meeting of the Canadian Tuberculosis Association in May of this year. (DEW Line for TB-Tuberculin Testing: Bulletin of the Canadian Tuberculosis Association, 34: 2, September-October 1956)

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### The Margin of Safety is Wide

The summer has seen widespread comment in the press on the fact that radiation might be genetically dangerous. The interest stemmed from the report, issued June 12th, of six committees of the National Academy of Sciences. Concern was augmented in no small measure by the fact that for the first time many people realized that they were exposed to radiation when they had a tooth x-rayed, when they had a chest x-ray made, or even, in some shops, when their feet were x-rayed to ascertain the fit of shoes.

The scientists make it quite clear that only radiation reaching the gonads could harm the genes. What people wanted to know was whether, when radiation was directed to other parts of the body, enough of it might reach the gonads to do harm.

In such a serious matter, tuberculosis workers and all others who use x-ray in diagnosis naturally wanted a clear statement. Expert opinion on the specific question of chest x-rays was at once obtained.

The answer is that a chest x-ray need not be feared at all. Dr. W. Edward Chamberlain, Professor of Radiology, Temple University Medical School, Philadelphia, has established measurements of approximate radiation received by the gonads from a single conventional chest x-ray, a regular photofluorograph, and a photofluorograph using the new mirror optic system. These measurements are accepted as authoritative, and they show that it would take

20 chest photofluorographs to reach 1% of the margin of safety, and that a conventional chest x-ray involves only a fraction of the radiation of a photofluorograph. The margin of safety is wide. (Bulletin of the Canadian Tuberculosis Association, 34: 7, September-October 1956)

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### Environmental Sanitation Officers Needed

Applications are desired from interested Medical Service Warrant and Medical Service Chief Warrant officers to attend a course of instruction in environmental sanitation at the University of California. The course consists of 5 months' academic training that leads to designation and assignment as environmental sanitation officer. At present, vacancies exist for five students during each spring semester at the University. All applications should reach the Bureau of Medicine and Surgery not later than 21 December 1956.

In conjunction with this announcement, environmental sanitation personnel are invited to read the article "Proposed Report on Educational and Other Qualifications of Public Health Sanitarians" which appeared in the September 1956 issue of the American Journal of Public Health. This article merits the close attention of interested personnel.

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